between August 15 and September 15, 1888, and Messrs. Blanford, Geikie, Hughes, and Topley have been nominated a committee to make the necessary arrangements.

BOTANICAL EXPLORATION OF THE CHILIAN ANDES

WE are indebted to the Kew authorities for the accompanying extract from a letter dated August 21, 1885, addressed to Sir Joseph Hooker by Dr. R. A. Philippi, the Professor of Botany at Santiago:—

"My son made in the summer during 110 days a voyage from Copiapo to the River Camarones, the actual boundary between Chili and Peru. He went first from Copiapo to Antofagasta de la Sierra (26° 5′ lat., 27° 20′ long., 3570 metres above the sea), where about 60 to 100 people are living, and thence (nearly always on the high table-land of the desert at an elevation of 3500 to 4200 metres) to Huasco de Tarapacá, from whence he descended to the tamarugal. The voyage extended over 8 degrees of latitude. This high table-land is nearly a single bed of trachytic lava, on which are scattered a number of extinct volcanoes, three of which are higher than Chimborazo—viz. the Llullaillaco, 6600 metres (I was, twenty-one years ago, at its west foot); the Tumiza, 6540; and the Pular, 6500 metres. There are many large salt lakes, several entirely dry. The vegetation in this easterly part of the desert is not so scanty as in the westerly, visited formerly by me, perhaps owing to a slight influence of the trade wind; and the water-places are more numerous and nearer one to the other.

"The number of species of plants brought home exceeds 400, of which half are not described. Amongst them is one *Polylepis* (without flowers), found only in one quebrada, and *Pilostyles Berterii*, a parasitic plant belonging to the same family as *Rafflesia*, found at the height of 3700 m.!—of course on an *Adesmia*. The three species of ferns are: *Pellæa ternifolia*, *Cheilanthes micropterus*, and a beautiful *Cincinnalis* which seems to be new. The most numerous family is, of course, Synanthereæ, with 94 sp.; Gramineæ has 42 (among them a new species of *Munroa*); Leguminosæ, 28–29; Verbenaceæ, 15; Solanaceæ, 28; Chenopodiaceæ, 15. Amongst these plants nine or ten must form, in my opinion, new genera. Some are very curious, as a Verbenacea, which grows in small hemispherical tufts and has the aspect of a Synantherea, with sessile flowers and pappus. This pappus proved to be a deeply-divided calyx with long cilia. There is another genus which I took at first sight for a *Tribulus*. I hope that my age, my health, my eyes, and my time will allow me to draw up the generic diagnosis, at least, of these plants."

KRAKATÃO

THE publication of the first part of Verbeek's "Krakatão," which chiefly contained the *history* of the great eruption of 1883, had raised many expectations regarding the promised description and discussion of the *phenomena* then observed. In his completed work, which contains 25 coloured drawings and 43 large and small maps, those expectations are fully realised. Immediately after the great outburst of August, 1883, the Dutch Indian Government sent him to visit Krakatão and to investigate the causes and effects of this awful catastrophe, more sudden and destructive than the famous eruption of Vesuvius. The great facilities they placed at his disposal enabled him to do this in the most satisfactory manner, and the really beautiful character of his completed work reflects the greatest credit not only on the learned author, but on the zeal and public spirit of the Dutch-Indian Government, who have aided him in making so valuable a contribution to scientific knowledge. So much interest has been taken by the general public, as well as by men of science, in this remarkable eruption, that we feel certain they also will welcome this volume, since it is lucid in style and profusely illustrated. With an expression of his gratitude to various institutions and individuals who have rendered him valuable assistance, the author gives in the preface a list of the weights and measures, together with a summary of the most recent ideas that geological science has received from the Krakatão eruption.

Krakatão itself lies on the point of intersection of three fissures or cracks in the earth's crust, and from this position is naturally exposed to volcanic disturbances. The earthquake of September 1, 1880, which damaged the lighthouse on Java's First Point, probably affected the Sunda fissure and facilitated the entrance of greater quantities of water into the volcanic furnace underlying the Straits of Sunda. Accepting the theory that volcanic eruptions are caused by steam at high pressure, we have thus the probable explanation of the terrible outburst of 1883. From the observations of earthquakes in the Indian archipelago during the year 1883, it appears that the eruption was neither preceded nor accompanied by heavy shocks. It is even far from certain that any trembling of the surface took place at the time, since the vibration of the air caused by the explosion was sufficient to shake houses and crack walls, and thus might easily have been mistaken for earthquakes. The author further treats of the ejected materials; their thickness, which, on some parts of Krakatão, amount to 60 metres; their size, varying from bodies of one cubic metre to the finest dust; the velocity with which they were thrown out, which must have been considerably greater than that of projectiles from the heaviest rifled ordnance; the elevation which they reached has been calculated at 50 kilometres, or nearly six times the height of Mount Everest, the highest mountain of the world, and the ashes have fallen over an immense area. From investigations made at fifty different places regarding the thickness of the fallen ashes and also the change in the depth of the sea around Krakatão, M. Verbeek has calculated that at least 18 cubic kilometres of matter must have been ejected. To give an illustration: imagine a box of ashes as large as Hyde Park and as high as the dome of St. Paul's, a hundred such boxes will give an idea of the mass of matter thrown out by Krakatão in 1883.

For three days after the eruption various ships to the westward found ashes falling on their decks; the names of these ships are given, as well as a map showing their exact position at the time. Mr. Verbeek believes that the finest particles, forced by the steam into the upper air, did not descend, but were carried westward by strong east winds, making twice the circuit of the earth and causing the phenomena observed at various places of a blue and green sun and moon. The passage of this cloud has been reported from islands and ships in the Pacific Ocean and its velocity must have been as great as that of a hurricane. After the steam and dust-cloud were dispersed over a wider area the beautiful red sunsets occurred, which were owing to the presence of such a large volume of aqueous vapour, while the blue and green colours of the celestial bodies were caused by the solid particles in the air.

The author goes on to elucidate the geology of Krakatão by two maps and four very instructive sections, showing its development during that number of periods. The first period was marked by the destruction of the great cone, probably 2000 metres high; during the second period the peak Rakata was formed by a lateral eruption, while in the third period two parasitic cones, Danau and Perbvewatan, were added, and these, by their successive eruptions, built up the island of Krakatão. In the fourth

period two of these cones have been destroyed by the terrible eruption of 1883. As our authentic records of Java only date back 300 years, we have absolutely no data respecting anything that occurred in the first three of these periods. We have accounts of an eruption of the Perbvewatan in the year 1680 from two travellers—Vogel and Hesse—to which I drew attention in the *Algemeen Dagblad van Ned. Indie* of May 23, 1884; but they say nothing as to whether that crater was formed at that time or had been already active. After a rest of 203 years the Perbvewatan became again active in May, 1883, and the Danau joined it in activity during the following June, forming the principal crater in the centre of the old volcano. In August, at the great eruption of the 27th, this part of the volcano was again destroyed; the Perbvewatan and the Danau, with the northern half of Rakata Peak, disappeared, and the site of the old crater is now covered by the sea between the islands Lang, Verlaten, and Krakataõ.

If the volcano resumes its activity, which is to be expected since the island lies on such a favourable point for eruptions, then small islands will appear between the three already mentioned. Krakataõ has been at rest since 1883, although it has erroneously been reported to be active. The roll of thunder and the flashing of lightning over the ruins of the crater wall have been mistaken for the action of subterranean forces, while the volcanic dust swept off from the crumbling summit by the wind appears at a distance like smoke.

A very curious and interesting feature of the recent eruption of Krakataõ was the ejection of fragments of underlying sedimentary rocks. The base of the Krakataõ volcano, and in general the entire bottom of the Straits of Sunda, consists of eruptive rocks of the miocene period covered with horizontal layers of diluvial and recent marine deposits, the materials of which have been derived from the various volcanoes in the vicinity

The first volume of Verbeek contained a valuable report from his colleague, Mr. J. A. Schuurman, on the phenomena of the eruption of May, 1883, as observed by himself, and the second volume has a lengthy and minute description by the mining engineer, Mr. J. W. Retgers, of his microscopical examination of the ash which fell at Buitenzorg, and of the various substances thrown out by the eruption of 1883, as well as of the older rocks.

A portion of the pumice which covered the sea after the eruption was carried westward by winds and currents and driven on the shores of various islands, even so far as the east coast of Africa. Another portion, which floated in the bays of Semangka and Lampong for several months, being driven in the beginning of 1884 by westerly winds along the coast of Java toward the Moluccas and Australia, is at present encountered in the Pacific Ocean between the Caroline and Marshall Islands. The author has calculated that this pumice will arrive on the west coast of America at Panama early in 1886.

With regard to the spherical bodies of a calcareous and clayey nature, called "Krakataõ marbles," found lying loosely on the surface, Mr. Verbeek at first supposed them to have been formed by the rotary motion of particles ejected from the volcano, but as they were afterwards found imbedded in ejected fragments of claystone and marls, this theory must be given up; he considers it possible that there may have been concretions in the tufa, although their presence in rock sometimes quite destitute of lime is certainly surprising, and this form of concretions has not been observed hitherto.

The chemical analyses of the rocks of Krakataõ can be fully relied upon, as they have been made by Dr. Cl. Winkler, Professor of Chemistry in the well-known Mining School of Freiberg, in Saxony. Dr. P. J. van der Stok, Director of the Meteorological Observatory at Batavia, proves that the disturbance in the position of the magnetic needle observed during the falling of volcanic dust was due, not to the eruption, but to the presence of magnetite therein, since the disturbance only lasted during the shower of ashes.

The low temperature observed at that time at Batavia, Buitenzorg, Kroë, Moeara-Doea, Bandar, and elsewhere was not due, according to hygrometrical observations, to the evaporation of the humidity of the ash; near the volcano and on ships in the vicinity it was oppressively hot, but the ashes thrown into the icy regions of the upper air and falling at a distance from the volcano had become cooled in their passage. Heavy electrical discharges occurred continually in the ash cloud around Krakataõ. On Java's First Point and at Flat Point the lighthouses were struck by lightning.

On Sunday, May 20, 1883, all Batavia was in great commotion as to the cause of the mysterious sounds and detonations which apparently came from the west and in fact did come from Krakataõ. At Serang and Anjer, which are situated much nearer to the volcano, no sounds had been heard. Again at Batavia on the morning of Monday, August 27, after the tremendous detonation at 8h. 26m., the eruption seemed to have ceased; they heard nothing at all of another enormous explosion which took place between 11 and 12, as reported from Middle and East Java. The explanation of this curious phenomenon is that earlier in the morning an ash cloud like a gigantic lamp-shade settled over the volcano, extending as far as Bandong, and that the quantity of these ash particles floating in the air prevented the transmission of sounds. Above the ash cloud the detonations were transmitted in all directions, but naturally were most distinctly heard to the windward. The farthest points where the sounds have been heard are Doreh, in New Guinea, some points of Central Australia, among others the telegraph stations of Daly Waters and Alice Springs, the islands of Rodriguez and Ceylon. Accounting for the difference in time and taking the rate of transmission of sounds, the author has calculated for different places which grand detonation in particular has been heard. The detonation of Monday morning, 5h. 30m., has been heard in Australia; that of 10h. 2m. a.m. has been heard at Banca, Billiton, the west coast of Borneo, the southern and eastern divisions of Borneo, Bawean and Banda; that of 10h. 52m. a.m. at Riouw, Middle and East Java, Bali, &c.; the last two detonations have not been noticed at Batavia and Buitenrorg. The area within which the explosions have been heard is represented on a map; it amounts to one-fourteenth of the whole surface of the globe—a quite extraordinary transmission of sound over so large a space. From the vibration of the air caused by the heavy detonations houses, doors, windows, clocks which hung against the walls, objects which stood on cabinets or were suspended from the ceiling were set trembling; but the swinging movements given to hanging objects by earthquakes have nowhere been observed. That some walls have been cracked, and houses been damaged so as to be no longer habitable, can be accounted for, according to the author, by the probability that they were already weak, and thus had an opportunity of showing it.

The greatest air-disturbance caused by the eruption has transmitted itself as a regularly moving atmospheric wave, with Krakataõ as centre, over the whole earth; and to the discussion of this entirely new phenomenon the author has devoted about seventy pages. With the assistance of very accurate barograms from Sydney, N.S.W., he calculated the heaviest explosion and fixed it at 10h. 2m. a.m. Krakataõ time. The same result has been arrived at by another calculation based on the markings of the indicator of the gasworks at Batavia. That indicator marked fifteen oscillations, corresponding with as many explosions, of which the four severest occurred in the forenoon of Monday, August 27, at 5h. 30m., 6h. 44m., 10h. 2m., and 10h. 52m., Krakataõ time. Of these four, that of 10h. 2m. a.m. was by far the

greatest, and it is probable that the air-wave then formed made the tour around the world. Forty places in Europe, America, and Australia are named where the disturbance of the air has been indicated by barometers, and with the help of these data the author has been able to calculate the velocity of the air movement, which has been found to be considerably less than the velocity of sound at 0° C.; consequently the movements took place at a great height and in cold-air strata.

According to the author's calculation this air-wave required $35\frac{1}{2}$ hours to make the circuit of the earth; it would have been of great interest to know just when the wave returned to Batavia, but, unfortunately, the diagrams of the indicator at the gasworks that might have marked such a return have been lost.

Part of Chapter V. treats of changes in the sea-bottom. The sea now covers to a depth of 200 to 300 metres what was formerly the northern part of Krakatão, and the small island called Polish Hat has also disappeared. Between the remaining islands, which are fragments of the old crater ring, an area has subsided of at least 41 square kilometres, or about 10,000 acres. Outside these islands, within a triangular space of 34 square kilometres, the sea is also deeper than formerly, so that altogether a surface of 75 square kilometres has subsided, which is clearly shown on maps 1, 2, and 4.

The part of the Peak which has disappeared must have been 1 cubic kilometre in size, and the fall of such a mass into the sea is quite sufficient to cause the great sea-wave which swept away thousands of human beings. Nowhere is there the slightest vestige of any upheaval, from which we may be certain that no seismic movement of the sea-bed has occurred. In Bantam and in the Lampong districts, after the disaster, the remains of the macadamised roads along the coast were everywhere as high above the sea as before, and soundings in Sunda Straits showed that no change of sea-bottom has taken place there. The shallower depth in the immediate vicinity of Krakatão, and between Krakatão and Sebesi, has probably been the result of fallen materials, to which also the islands Steers and Calmeyer, which have since disappeared, for the greater part, no doubt owed their existence.

As the last of the phenomena which accompanied the eruption of 1883, the movements of the sea are discussed, as shown by the destructive waves which have made this catastrophe so terrible. It is certain that the greatest wave of all started from Krakatão at 10 a.m., and that wave completed the destruction of Telok Betong, Anjer, and Tjiringin. This great wave had been preceded by small waves on Sunday afternoon at 6, and Monday morning at 6h. 30m., by which these places were already partly submerged and destroyed; but the really very remarkable phenomenon was observed that not every wave reached all the places situated along the coasts of the Straits of Sunda. For example: the wave which destroyed on Monday morning, at 6, a part of Anjer, and at 6h. 30m. the lower part of Telok Betong, has not been noticed at Tjiringin. The author explains this by the supposition that the preceding waves were not caused by the falling in of parts of the volcano, but by the enormous quantities of ejected matter that splashed into the sea. Suppose on Sunday evening during the eruption of 5h. 7m. a large quantity was thrown out on the spot where Calmeyer lies, the wave thus formed was noticed everywhere around —at Merak, Anjer, Tjiringin, Beneawang, Telok Betong, and Ketimbang. If, during the eruption on Monday morning (5h. 30m.), the matter was thrown down on the spot where Steers lies, then the wave would be obstructed in a south-easterly direction by Calmeyer, and Tjiringin, lying behind it, be protected, whilst the wave would roll to Anjer, where it must have arrived a little after 6 a.m. In like manner, at the explosion of Monday morning (6h. 44m.), Anjer and Tjiringin were protected by Krakatão, and Telok Betong by Lagoendie, whilst Beneawang in the Bay of Semangka was nearly destroyed; but the wave of 10 o'clock being of such enormous magnitude, swept over all obstacles.

Most careful calculations fix the time of the formation of the great wave at 10 a.m., the same hour at which the heaviest detonation was heard, so that the ejection of a stupendous quantity of ashes, pumice, and mud, the rushing in of the sea upon the mass of glowing lava, and the falling in of half the mountain, must have taken place almost simultaneously. From the height registered by the tide-gauges at Tandjong-Priok on Monday at 7h. 30m. p.m. it is evident that Batavia narrowly escaped a second inundation. The data collected from all parts of the world regarding an extraordinary movement of the sea soon after the eruption, made it possible to compute the velocity of the great wave, and this velocity enabled the author to calculate the average depth of the sea along the path the wave travelled. In this way he has ascertained that the depth of the sea between Krakatão and South Africa must amount to 4200 metres; between Krakatão and Rodriguez, 4560; and between Krakatão and South Georgia, 6340 metres; which shows that west and south-west of Australia there must be a deep-sea basin, the existence of which has not yet been revealed by soundings. Mr. Verbeek considers that, if the irregularities of the tide noticed at Aspinwall happened at the hour reported, they were not caused by the Krakatão wave, but by volcanic activity in the Antilles; that wave, however, was observed on the coast of France, at San Francisco, and even in Alaska. Its velocity was so great that it reached Aden in twelve hours, a distance of 3800 nautical miles, usually traversed by a good steamer in twelve days.

It is greatly to be regretted that our knowledge of this phenomenon beyond the Indian Ocean remains incomplete, on account of the small number of tide-gauges on the Atlantic and Pacific coasts; the author suggests that this want shall be promptly supplied, so that in future no important movement of the sea shall escape notice.

Chapter VI. is devoted to a consideration of the volcanic phenomena which have been observed during the eruption of Krakatão at other places within or beyond the Indian Archipelago. Simultaneously the volcano Gœnong Api, on the island of Great Sangi, the Merapi on Java, the Merapi on Sumatra, and also, it is supposed, a volcano in the Moluccas were in activity. A seismic movement of the sea-bottom occurred in the whole region of the Moluccas, which could not have been due to Krakatão, and this movement has been noted by three tide gauges in the Straits of Madura. Over a large part of Australia, from August 27 to 29, more or less serious earthquakes were felt—a phenomenon the more remarkable because Australia suffers very seldom from any shaking of the earth. It is probable that sudden displacements of steam—perhaps of lava—occurred in the subterranean cavities, caused by a change of pressure through the great discharge of lava and steam at Krakatão. We must therefore conclude that the underground recesses between Krakatão and Australia are in some way connected, so that any change of pressure in one cavity causes a change of pressure in the other.

Even at points in the neighbourhood of the antipodes of Krakatão shocks and volcanic effects were noticed, and if, as is probable, some point in the Antilles was in activity, then evidently the whole surface of the earth during the terrible discharge of Krakatão was agitated, and apparently the crust of our earth is not so solid as many of its inhabitants fondly imagine.

The author maintains the doctrine that part of our globe remains still in a molten state, and he disputes the theory, which has been advanced, that the heat of the volcanic furnaces is entirely due to local chemical action. He, however, acknowledges that it is very difficult to explain

why, during the Krakatão outburst, the antipodes was more favourably situated for an eruption than the other volcanic regions of the earth. A similar tendency during former eruptions has not been recorded, and we must wait until another great outburst enables us to decide whether it is of any importance.

The coloured drawings, twenty-five in number, are all by Mr. Schreuders, who accompanied Mr. Verbeek in October 1883, and give a faithful picture of the devastated regions as they appeared two months after the eruption. The most striking picture is that of the stupendous wall, 832 metres high, which was laid bare by the destruction of the northern part of the peak. No one who has gazed upon this grandest of nature's ruins can forget its solemn desolation.

The careful typographical execution of the work reflects great credit on the Director of the Government Printing Office at Batavia. We can heartily congratulate the learned author on the successful completion of his most valuable and exhaustive work, interesting alike to the scientific and general reader.

ON THE COLOUR-SENSE

THERE is an interesting paper in the *Nineteenth Century*[1] for February last in which the colour-nomenclature in the Homeric poems and that of the modern Hindústání language are compared with modern English usage. The writer traverses to a great extent Mr. Gladstone's suggestion[2] that the ancient Greeks were deficient in colour-sense (*i.e.* compared with modern Englishmen), and propounds the idea that the natives of India have a keen colour-sense.

It will be shown below that the use of colour terms in modern English is not only loose, but even incongruous. Illustrations will be taken from both the papers referred to, with additions from the author's experience in India.

Natural Objects.—Uniformity might surely be expected in the use of colour terms with bright-coloured natural objects. There is, however, no uniformity in their use, even when intended to be real colour designations; and opposite and sometimes unnatural colours are—in a figurative sense—ascribed to a single object.

Thus the colour of fresh blood and the tint arising therefrom in the healthy cheek and also in the blushing cheek (of a fair person) are probably among the most well-marked, definite, natural colours. Yet the blood itself is styled *blood-red*, *gory*, *crimson*, *red*, *scarlet*, whilst the healthy cheek is described as *carnation*, *vermeil*, *red*, *ruddy*, *rosy*, and *pink*, and the blushing cheek as *scarlet*, *crimson*, *red*, *aflame* (perhaps rather a heat than a colour term). These terms, though used as real colour designations, are by no means synonymous, whilst in a figurative sense quite different and even unnatural colours are ascribed. Thus *blue blood* is used of aristocratic descent, *black blood* and *white* or *pale blood* of descent from dark or fair races.

Again, healthy bile is bright yellow, and a yellowish tinge in the "white" of the eye is often called a *bilious* colour; yet in the figurative sense black is ascribed to the condition known as *melancholy*, *atrabiliousness*, *black bile*.

The colour of good milk is so characteristic as to give rise to the term *milk white*, whilst skim-milk or poor milk which has merely a blueish tinge is styled *sky-blue*.

Again, the parts of the human eye and of a bird's egg styled from their characteristic tint the *white* of the eye and the *white* of an egg, always bear the *name* of *white*, although occasionally of a decidedly blueish tinge, stronger than that of skim-milk.

Colour is usually ascribed to the human eye from the tint of the iris, probably as being the part most subject to colour-variation—*e.g.* *black*, *dark*, *pink*, *brown*, *hazel*, *green*, *blue*, *gray*, *light*. Of these, *black* is loosely applied (*e.g.* in the phrase *black-eyed*) in the case of any dark-coloured iris, whilst *green* and *blue* are used in the case of a mere tinge of green or blue.

On the other hand the phrase *red eyes* indicates either redness of the eyes (as from weeping) or a bloodshot state of the "whites," whilst a *black eye* implies only a dark-coloured bruise of the skin near the eye; *green in the eye* is a figurative expression implying freshness or ignorance, and *green-eyed* is a condition ascribed to jealousy.

The colour of sea-water varies from greenish (aquamarine) to a deep blue (ultramarine); but a wide range of colour-names is applied to various seas—*e.g.* the *Black Sea*, *Red Sea*, *Yellow Sea*, *White Sea*, and this in many languages.

The colour of river-water varies from turbid yellow to blueish and colourless; but in this case there is an equally wide range of colour-name—*e.g.* *Blackadder R.*, *Blackwater R.*, *Red R.*, *Orange R.*, *Green R.*, *Blue R.*, *Blue Nile*, *Grey R.*, *White R.*, *White Nile*, *Whiteadder R.*

Human Colouring.—Colour-terms, applied to races of men, or to the complexion or hair, are loosely used to cover a wide range of colour. Thus *black*, *dark*, *dusky*, *swarthy*, and *nigger* (*lit.* black), are applied to any merely dark skins; *red* and *coppery* to the whole of the North American (so-called) Indians; *white* and *pale* to any fair skin. The terms *dark* and *fair* (shade- rather than colour-names) are loosely applied both to the complexion and to personal description. Thus any complexion darker than the average in a fair race, or fairer than the average in a dark race, is called *dark* or *fair* respectively; the two terms being merely *relative* in this usage.

Also among a fair race, a person with dark eyes and dark hair is called *dark*, and one with light eyes and fair hair is called *fair*, without reference to complexion. Again, the terms *red*, *carroty*, *fiery* are often applied to hair which has merely a reddish tinge.

Among races of different complexion in the same country curious figurative usages of the racial colour-terms arise. Thus *nigger* (*lit.* black), *black*, *dark*, *redskin* are sometimes used by a (ruling) fair race to denote inferiority, and this usage is sometimes adopted even by the (ruled) dark race—*e.g.* occasionally by both negroes and natives of India. There is a curious restricted use of the phrase *gorá log* (*lit.* fair people) in India to denote the British soldiery, but not the higher classes of English.

Animal Colours.—Colour terms applied to animals have sometimes a technical meaning quite different to the fundamental colour. Thus *bay* and *strawberry*, as applied to horses, are very different colours from those of the bay-leaf and strawberry; thus also the Hindústání term *sabz*, usually meaning green, denotes *gray* when applied to animals. Again, *red* is applied to animals—*e.g.* cows, deer, foxes, squirrels, &c., whose coats are any sort of reddish-brown. A similar usage occurs in the Homeric poems—(*e.g.* φοινιξ and its derivatives), and in the Hindústání word *lál* (*lit.* ruby).

Colour-terms are sometimes applied to animals, plants, &c., even when only slightly affected with the named colour, to indicate a particular variety of the object in question. Thus a *blue* pigeon, fox, or rabbit, is only slaty blue; a *white* elephant is only spotted with white pink patches; a *blood* orange may be only speckled with blood-markings; a *black lion* and *black* leopard are only dark with black markings. Colours differing from nature are also ascribed to animals on signboards—*e.g.* *black*, *red*, *blue*, *white* lion; *blue* bear, &c.; thus also *green* man; also (in cookery) a *green* goose.

Artificial Objects.—Among artificial objects, even of strongly-marked hue, colour-terms are often strangely mis-

[1] "Light from the East on the Colour Question," by W. J. Furrell, p. 321 of *Nineteenth Century* for February, 1885.

[2] "The Colour Sense," by the Right Honourable W. E. Gladstone, M.P., p. 366 of *Nineteenth Century* for October, 1877.